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and

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5

Abstract

Fuel cell system comprising at least one fuel cell which includes an anode compartment and a cathode compartment which are separated from one another by a proton-conducting membrane, further comprising a cathode feeder for delivering oxygen-containing gas to the cathode compartment, an anode feeder for delivering a liquid coolant/fuel mixture to the anode compartment, the anode compartment being disposed in an anode circuit which comprises a gas separator and a pump, and cooling of the coolant/fuel mixture circulating in the anode circuit is effected by the fuel cell which is designed for operation involving water break-through from the anode compartment into the cathode compartment. The evaporation cooling thus achieved in the fuel cell results in cooling of the coolant/fuel mixture at a steady-state operating temperature which is established in the fuel cell as a function of the membrane properties and the speed of the pump, thus obviating the need for any additional cooler in the anode circuit itself.

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